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Age Composition of the 1995 Klamath River Fall Chinook Run
Coastal California Fish and Wildlife Office

ABSTRACT

The age composition of the in-river run of Klamath River fall chinook is an integral part of the database used to manage this salmon stock. Age composition is used in conjunction with annual estimates of in-river harvest and escapement to estimate the ocean stock size of Klamath River fall chinook for fishery managment purposes. A total of 13,994 scale samples were examined to estimate the age composition of fall chinook in the Klamath River in 1995. The scales were collected from 13 locations and were aged using scales from coded wire tag recoveries as references. Age composition estimates from each sampling location were weighted by the magnitude of that location's contribution to the inriver run. Because some locations were inadequately sampled, surrogate samples were used represent to them. Angler harvest and in-river run size for 1995 were estimated by applying the age composition to the California Department of Fish and Game's population "megatable". Seven versions of these estimates are given, using different combinations of surrogate samples.

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United States Department of the Interior

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February 1, 1996

TO: Cooperating Agencies

FROM: Michael Marshall

SUBJECT: 1995 Klamath River fall chinook age composition project.

A total of 13,994 scale samples were examined to estimate the 1995 Klamath River fall chinook age composition (Table 1). Of the 13,994 scale samples examined, 547 were not used in the sample due to: 1) no scales in envelope, scale aberrations (regeneration and reabsorption) (94%), and 2) inconclusive circuli patterns (6%).

In order to provide the Klamath River Technical Advisory Team (KRTAT) with as much information as possible, the USFWS CCFRO applied the 1995 age composition results to the 1995 CDFG "megatable" in seven different combinations (Appendix 1-14). Estimates for the adult age composition were formulated using 1) direct application of adult scale age proportions to the CDFG "megatable" for sites with adequate sampling, and 2) the use of a surrogate sample applied to sites inadequately sampled. As in the past, jack escapement and harvest estimates from the "megatable" were used in the age composition..

In past years, age composition for spawner escapement estimates from the Main Stem Klamath River$_{\text{(excluding IGH)}}$, Misc. Klamath tributaries$_{\text{(above Hoopa and Yurok Reservations)}}$, Hoopa and Yurok Reservation tributaries, and Angler Harvest, as "Balance of Klamath River", were calculated using the surrogate group of Shasta River, Scott River, and Salmon River spawners (S,S,S). Concerns regarding whether or not this surrogate "best" represents the age composition for this portion of the Klamath River (IGH to Hwy 101 bridge) initiated the utilization of various surrogates (Table 2).

In 1995, age composition estimates incorporate IGH and Bogus Creek into the (S,S,S) surrogate (Table 2). The number of IGH fish tagged and released significantly contributes to the number of natural spawners. For this reason, both IGH and Bogus Creek data should also be used in the surrogate.

Similarly, in the past, Klamath River Creel age composition was applied to the Trinity River Angler Harvest$_{\text{(above Willow Crk)}}$; the Trinity River Carcass Survey age composition was applied to Trinity River Basin Natural Spawner estimates. Different surrogate combinations were utilized to determine the age composition for the Trinity River Basin (Table 3).

Table 1. Scale sampling locations and numbers of samples provided for the 1995 Klamath River fall chinook age composition.

Sampling Location	# Samples	Jacks	Adults	Not Used	Agency
Iron Gate Hatchery (IGH)	1,844 [a]	259	1,766	59	CDFG
Trinity River Hatchery (TRH)	2,339 [b]	109	2,253	54	CDFG
Salmon River Carcass Survey	816	188	580	48	CDFG
Scott River Carcass Survey	515	87	413	15	CDFG
Shasta River Weir	1,743	79	1,522	142	CDFG
Bogus Creek Weir	1,191	55	1,103	33	CDFG
Willow Creek Weir	1,511	154	1,299	58	CDFG
Trinity River Carcass Survey	819	71	739	9	CDFG
Misc. Klamath Tribs. (above Hoopa and Yurok harvest)	0	0	0	0	CDFG
Klamath River Creel Census	1,718	737	919	62	CDFG
Hoopa Tribal Net Harvest	275	15	254	6	HOOPA TRIBE
Yurok Tribal Net Harvest (Mouth to Hwy 101)	497	10	481	6	YUROK TRIBE
Yurok Tribal Net Harvest (Middle Klamath)	276	4	270	2	YUROK TRIBE
Yurok Tribal Net Harvest (Upper Klamath to Weitchpec)	415	4	393	18	YUROK TRIBE
TOTALS	13,959	1,772	11,992	512	

[a] Total sample comprised of 980 Ad-clips (55%) and 786 No-clips (45%).
Total sample comprised of 1,366 Ad-clips (58%) and 973 No-clips (42%).

Other concerns arise regarding both IGH and TRH. Sampling is biased towards Ad-clipped chinook. This allows for a disproportionate number of scales collected from Ad-clipped fish, as is evident in the Ad-clip to No-clip ratio of scales collected to the Ad-clip to no-clip ratio of returning fall chinook to the hatcheries (58% to 9% and 55% to 10%) respectively for TRH and IGH scale samples.

Table 2. Differing age computation reusults from utilization of various surrogate scale sample combinations and applying them to the 1995 CDFG "megatable" numbers for adults (3, 4, 5 yr olds) within the Trinity River Basin.

				Resulting changes to Trinity River Basin Age composition (minus Klamath River contribution.)				
	Spawner Escapement		**In-River Harvest**					
	TRH	Natural Spawners Trinity River Basin (above Willow Crk, excluding TRH)	Angler Harvest (Trinity River Basin above Willow Crk)	2yrs	3yrs	4yrs	5yrs	Total
Surrogate	Willow Crk	Willow Crk	Willow Crk	14,227	96,661	6,117	167	117,172
		TR Carcass	TR Basin (WC) - (TRCS + TRH)	14,227	96,685	6,098	161	117,172
		TR Carcass	KR Creel	14,227	95,282	7,154	509	117,172

TR Basin (WC) - (TRCS + TRH) = TRH + TR natural spawners + TR angler harvest multiplied by age proportions @ Willow Crk. For 3, 4, & 5 yrs.

TRCS = TR Carcass survey age composition applied to "megatable" numbers for TR Basin natural spawners (3, 4, 5 yr olds).

TRH = TRH adult proportions (3, 4, 5 yr olds) derived from TRH scale samples and applied to TRH "megatable" estimates.

Table 3. Differing age computation results from the utilization of various surrogate scale sample combinations and applying them to the 1995 CDFG "megatable" numbers for adults (3, 4, 5 yr, olds) within the Klamath River Basin.

						Resulting changes to Klamath River Basin Age composition (minus Trinity River contribution.)				
	Spawner Escapement			**In-River Harvest**						
	Natural Spawners			Angler Harvest						
	Mainstem Klamath River (excluding IGH)	Misc. Klamath Tributaries (above Hoopa & Yurok Reservations)	Hoopa & Yurok Reservation Tribs.	Klamath River (below Hwy 101 bridge)	Balance of Klamath River system	2yrs	3yrs	4yrs	5yrs	Total
Surrogate	I, B, S, S, S	I, B, S, S, S	S .S. S	KR Creel	I, B, S, S, S	12,721	85,631	10,106	2,034	110,492
	I, B, S, S, S	I, B, S, S, S	S .S. S	KR Creel	S .S. S	12,721	85,581	10,160	2,031	110,492
	I, B, S, S, S	I, B, S, S, S	S .S. S	KR Creel	KR Creel	12,721	85,514	10,198	2,059	110,492

I, B, S, S, S = IGH, Bogus Crk., Shasta R., Scott R., Salmon R.
S,S, S = Shasta R., Scott R., Salmon R.

In the past scale collecting at IGH and TRH has been biased towards Ad-clipped fish. The resulting samples from both hatcheries must be weighted in order to come up with reliable estimates. In the future, an increase in the number of scales sampled from Non-clipped fish may allow for a more accurate estimate.

For the Klamath in-river and angler harvest estimates, scale sample numbers which are collected from the estuary to the mouth of Coon Creek must be weighted. On the Trinity River Basin, the only scales being collected are spawner scales from Willow Creek and TRH. The need to collect scale samples from areas more representative of the entire Klamath and Trinity River Basins may contribute to better estimating both run- size and angler-harvest.

Since there is a lack of representative sampling sites on the Klamath and Trinity River Basins, the need to use surrogate sampling sites is necessary. These surrogates may not accurately represent many of the locations that are lacking sampling sites. For this reason the estimates of angler harvest and in-river run size have been calculated using seven different surrogate combinations (appendix 1-14). The need to collect scale samples from as many locations on the Klamath and Trinity as possible would not only allow for a more accurate estimate of angler harvest and in-river run size, but also lessen the need to use surrogate locations in these estimates.

Appendix 1 Age Composition of the 1995 Klamath River fall chinook run, using jack estimates from CDFG "megatable", and scale analysis for adults.

			AGE			Total	
Scale sample utilized as surrogate		2	3	4	5	Adults	Total
	SPAWNER ESCAPEMENT						
	Hatchery Spawners						
	Iron Gate Hatchery (IGH)	259	12,395	1,122	232	13,[illegible]9	14,008
Willow Crk	Trinity River Hatchery (TRH)	109	14,008	847	23	14,878	14,985
	Subtotals	368	26,401	1,969	255	28,628	28,993
	Natural Spawners						
	Trinity River Basin						
Willow Crk	(above Willow Creek, excluding TRH)	13,019	77,856	4,711	127	82,694	95,713
	Salmon River Basin	1,650	2,779	1,077	124	3,980	5,630
	Scott River Basin	3,200	8,152	1,122	183	9,457	12,657
	Shasta River Basin	490	11,987	720	33	12,740	13,230
	Bogus Creek Basin	1,002	28,748	2,131	455	31,333	32,335
(I,B,S,S,S)*	Main Stem Klamath River	1,322	5,825	561	93	6,480	7,802
	(excluding IGH)						
(I,B,S,S,S)*	Misc Klamath Tributaries	831	3,186	307	51	3,544	4,375
	(above Hoopa and Yurok Reservations)						
(S,S,S)**	Hoopa and Yurok Reservation tribs.	34	360	48	5	413	447
	Subtotals	21,548	138,893	10,677	1,071	160,641	172,189
	Total Spawner Escapement	21,916	165,294	12,646	1,326	189,268	201,182
	IN-RIVER HARVEST						
	Angler Harvest						
KR Creel	Klamath River (below Hwy 101 bridge)	282	631	97	20	747	1,029
Willow Crk	Trinity River Basin (above Willow Creek)	794	1,588	96	3	1,687	2,481
(I,B,S,S,S)*	Balance of Klamath system	3,268	1,909	184	31	2,124	5,392
	Subtotals	4,344	4,128	377	53	4,558	8,902
	Indian Net Harvest						
	Klamath River (below Hwy 101 bridge)	137	3,523	1,181	415	5,119	5,256
	Klamath River (Hwy 101 to Trinity mouth)	152	5,373	1,350	332	7,055	7,207
	Trinity River (Hoopa Reservation)	268	2,943	426	13	3,383	3,651
	Subtotals	557	11,839	2,957	760	15,557	16,114
	Total In-river Harvest	4,901	15,968	3,334	813	20,115	25,016
	IN-RIVER RUN						
	Totals						
	In-river Harvest and Escapement	26,817	181,262	15,980	2,139	199,381	226,198
	Angling Mortality (2% of harvest)	87	83	8	1	91	178
	Net Mortality (8% of harvest)	45	947	237	61	1,245	1,289
	Total In-river Run	26,948	182,291	16,224	2,201	200,717	227,665

*(I,B,S,S,S) = IGH, Bogus Crk, Shasta R., Scott R., Salmon R.

**(S,S,S) = Shasta R., Scott R., Salmon R.

Appendix 2. Age Composition (percentages) of the 1995 Klamath River fall chinook run using jack estimates from the CDFG "megatable", and scale analysis for adults.

		AGE			
	2	3	4	5	Total
SPAWNER ESCAPEMENT					
Hatchery Spawners					
Iron Gate Hatchery (IGH)	2%	88%	8%	2%	100%
Trinity River Hatchery (TRH)	1%	93%	6%	0%	100%
Subtotals					
Natural Spawners					
Trinity River Basin					
(above Willow Creek, excluding TRH)	14%	81%	5%	0%	100%
Salmon River Basin	29%	49%	19%	2%	100%
Scott River Basin	25%	64%	9%	1%	100%
Shasta River Basin	4%	91%	5%	0%	100%
Bogus Creek Basin	3%	89%	7%	1%	100%
Main Stem Klamath River	17%	75%	7%	1%	100%
(excluding IGH)					
Misc Klamath Tributaries	19%	73%	7%	1%	100%
(above Hoopa and Yurok Reservations)					
Hoopa and Yurok Reservation tribs.	8%	81%	11%	1%	100%
Subtotals					
Total Spawner Escapement	11%	82%	6%	1%	100%
IN-RIVER HARVEST					
Angler Harvest					
Klamath River (below Hwy 101 bridge)	27%	61%	9%	2%	100%
Trinity River Basin (above Willow Creek)	32%	64%	4%	0%	100%
Balance of Klamath system	61%	35%	3%	1%	100%
Subtotals	49%	46%	4%	1%	100%
Indian Net Harvest					
Klamath River (below Hwy 101 bridge)	3%	67%	22%	8%	100%
Klamath River (Hwy 101 to Trinity mouth)	2%	75%	19%	5%	100%
Trinity River (Hoopa Reservation)	7%	81%	12%	0%	100%
Subtotals	3%	73%	18%	5%	100%
Total In-river Harvest	20%	64%	13%	3%	100%
IN-RIVER RUN					
Totals					
In-river Harvest and Escapement	12%	80%	7%	1%	100%
Angling Mortality (2% of harvest)	49%	46%	4%	1%	100%
Net Mortality (8% of harvest)	3%	73%	18%	5%	100%
Total In-river Run	12%	80%	7%	1%	100%

Appendix 3. Age Composition of the 1995 Klamath River fall chinook run, using jack estimates from CDFG "megatable", and scale analysis for adults.

Scale sample utilized as surrogate				AGE		Total	
		2	3	4	5	Adults	Total
	SPAWNER ESCAPEMENT						
	Hatchery Spawners						
	Iron Gate Hatchery (IGH)	259	12,395	1,122	232	13,749	14,008
	Trinity River Hatchery (TRH)	109	14,670	204	2	14,876	14,985
	Subtotals	368	27,065	1,326	234	28,625	28,993
	Natural Spawners						
	Trinity River Basin						
TR carcass survey	(above Willow Creek, excluding TRH)	13,019	75,980	6,266	448	82,694	95,713
	Salmon River Basin	1,650	2,779	1,077	124	3,980	5,630
	Scott River Basin	3,200	8,152	1,122	183	9,457	12,657
	Shasta River Basin	490	11,987	720	33	12,740	13,230
	Bogus Creek Basin	1,002	28,747	2,131	455	31,333	32,335
(I,B,S,S,S)*	Main Stem Klamath River	1,322	5,825	561	93	6,480	7,802
	(excluding IGH)						
(I,B,S,S,S)*	Misc. Klamath Tributaries	831	3,186	307	51	3,544	4,375
	(above Hoopa and Yurok Reservations)						
(S,S,S)**	Hoopa and Yurok Reservation tribs.	34	360	48	5	413	447
	Subtotals	21,548	137,017	12,232	1,392	150,641	172,189
	Total Spawner Escapement	21,916	164,082	13,558	1,626	179,266	201,182
	IN-RIVER HARVEST						
	Angler Harvest						
KR Creel	Klamath River (below Hwy 101 bridge)	282	631	97	20	747	1,029
TRH(WC)-(TRCS+TRH)***	Trinity River Basin (above Willow Creek)	794	2,803	(819)	(297)	1,687	2,481
(I,B,S,S,S)*	Balance of Klamath system	3,268	1,909	184	31	2,124	5,392
	Subtotals	4,344	5,343	(538)	(247)	4,558	8,902
	Indian Net Harvest						
	Klamath River (below Hwy 101 bridge)	137	3,523	1,181	415	5,119	5,256
	Klamath River (Hwy 101 to Trinity mouth	152	5,373	1,350	332	7,056	7,207
	Trinity River (Hoopa Reservation)	268	2,943	427	13	3,383	3,651
	Subtotals	557	11,839	2,957	760	15,557	16,114
	Total In-river Harvest	4,901	17,178	2,422	514	20,116	25,016
	IN-RIVER RUN						
	Totals						
	In-river Harvest and Escapement	26,817	181,262	15,980	2,140	199,381	226,198
	Angling Mortality (2% of harvest)	87	107	(11)	(5)	91	178
	Net Mortality (8% of harvest)	45	947	237	61	1,245	1,290
	Total In-river Run	26,948	182,316	16,206	2,196	200,717	227,666

*(I,B,S,S,S) = IGH, Bogus Crk, Shasta R., Scott R., Salmon R.
**(S,S,S) = Shasta R., Scott R., Salmon R.
*** TRH(WC)= TRH adults (3 yr, 4yr, 5yr) proportions derived from Willow Crk scale samples.
*** TRCS = Adult proportions derived from TR Carcass survey scales.
*** TRH = TRH adult proportions derived from TRH scale samples.

Appendix 4. Age Composition (percentages) of the 1995 Klamath River fall chinook run using jack estimates from the CDFG "megatable", and scale analysis for adults

			AGE		
	2	3	4	5	Total
SPAWNER ESCAPEMENT					
Hatchery Spawners					
Iron Gate Hatchery (IGH)	2%	88%	8%	2%	100%
Trinity River Hatchery (TRH)	1%	98%	1%	0%	100%
Subtotals					
Natural Spawners					
Trinity River Basin					
(above Willow Creek, excluding TRH)	14%	79%	7%	0%	100%
Salmon River Basin	29%	49%	19%	2%	100%
Scott River Basin	25%	64%	9%	1%	100%
Shasta River Basin	4%	91%	5%	0%	100%
Bogus Creek Basin	3%	89%	7%	1%	100%
Main Stem Klamath River	17%	75%	7%	1%	100%
(excluding IGH)					
Misc. Klamath Tributaries	19%	73%	7%	1%	100%
(above Hoopa and Yurok Reservations)					
Hoopa and Yurok Reservation tribs.	8%	81%	11%	1%	100%
Subtotals					
Total Spawner Escapement	11%	82%	7%	1%	100%
IN-RIVER HARVEST					
Angler Harvest					
Klamath River (below Hwy 101 bridge)	27%	61%	9%	2%	100%
Trinity River Basin (above Willow Creek)	32%	113%	-33%	-12%	100%
Balance of Klamath system	61%	35%	3%	1%	100%
Subtotals	49%	60%	-6%	-3%	100%
Indian Net Harvest					
Klamath River (below Hwy 101 bridge)	3%	67%	22%	8%	100%
Klamath River (Hwy 101 to Trinity mouth)	2%	75%	19%	5%	100%
Trinity River (Hoopa Reservation)	7%	81%	12%	0%	100%
Subtotals	3%	73%	18%	5%	100%
Total In-river Harvest	20%	69%	10%	2%	100%
IN-RIVER RUN					
Totals					
In-river Harvest and Escapement	12%	80%	7%	1%	100%
Angling Mortality (2% of harvest)	49%	60%	-6%	-3%	100%
Net Mortality (8% of harvest)	3%	73%	18%	5%	100%
Total In-river Run	12%	80%	7%	1%	100%

Appendix 5. Age Composition of the 1995 Klamath River fall chinook run, using jack estimates from CDFG "megatable", and scale analysis for adults.

Scale sample utilized as surrogate		2	3	4	5	Adults	Total
	SPAWNER ESCAPEMENT						
	Hatchery Spawners						
	Iron Gate Hatchery (IGH)	268	12,386	1,122	232	13,740	14,008
	Trinity River Hatchery (TRH)	100	14,679	204	2	14,885	14,985
	Subtotals	368	27,065	1,326	234	28,625	28,993
	Natural Spawners						
	Trinity River Basin						
TR Carcass	(above Willow Creek, excluding TRH)	13,019	75,980	6,266	448	82,694	95,713
	Salmon River Basin	1,650	2,779	1,077	124	3,980	5,630
	Scott River Basin	3,200	8,152	1,122	183	9,457	12,657
	Shasta River Basin	490	11,987	720	33	12,740	13,230
	Bogus Creek Basin	1,002	28,748	2,131	455	31,333	32,335
(I,B,S,S,S)**	Main Stem Klamath River (excluding IGH)	1,322	5,825	581	83	6,489	7,811
(I,B,S,S,S)**	Misc. Klamath Tributaries (above Hoopa and Yurok Reservations)	831	3,186	307	51	3,544	4,375
(S,S,S)**	Hoopa and Yurok Reservation tribs.	34	360	48	5	413	447
	Subtotals	21,548	137,017	12,232	1,392	150,631	172,189
	Total Spawner Escapement	21,916	164,082	13,558	1,626	179,256	201,182
	IN-R[illegible]ARVEST						
	Angler Harvest						
KR Creel	Klamath River (below Hwy 101 bridge)	282	631	96	20	747	1,029
KR Creel	Trinity River Basin (above Willow Creek)	794	1,424	218	44	1,687	2,481
(S,S,S)**	Balance of Klamath system	3,268	1,909	184	31	2,124	5,392
	Subtotals	4,344	3,966	498	94	4,558	8,902
	India[illegible] Harvest						
	Klam[illegible] River (below Hwy 101 bridge)	137	3,523	1,181	415	5,119	5,256
	Klam[illegible] River (Hwy 101 to Trinity mouth)	152	5,373	1,350	332	7,055	7,207
	Trin[illegible]er (Hoopa Reservation)	268	2,942	428	13	3,383	3,651
	Sub[illegible]ls	557	11,838	2,957	760	15,557	16,114
	Total In-river Harvest	4,901	15,804	3,456	854	20,115	25,016
	IN-[illegible]VER RUN						
	Totals						
	In-river Harvest and Escapement	26,817	179,886	17,015	2,480	199,381	226,198
	Angling Mortality (2% of harvest)	87	79	10	2	91	178
	Net Mortality (8% of harvest)	45	947	237	61	1,245	1,290
	Total In-river Run	26,949	180,913	17,261	2,543	200,717	227,666

*(I,B,S,S,S)= IGH, Bogus Ck., Shasta R., Scott R., Salmon R.

**(S,S,S)= Shasta R., Scott R., Salmon R.

Appendix 6. Age Composition (percentages) of the 1995 Klamath River fall chinook run using jack estimates from the CDFG "megatable", and scale analysis for adults.

	2	3	4	5	Total
SPAWNER ESCAPEMENT					
Hatchery Spawners					
Iron Gate Hatchery (IGH)	2%	88%	8%	2%	100%
Trinity River Hatchery (TRH)	1%	99%	1%	0%	100%
Subtotals					
Natural Spawners					
Trinity River Basin					
(above Willow Creek, excluding TRH)	14%	79%	7%	0%	100%
Salmon River Basin	28%	49%	19%	2%	100%
Scott River Basin	25%	64%	9%	1%	100%
Shasta River Basin	4%	91%	5%	0%	100%
Bogus Creek Basin	3%	89%	7%	1%	100%
Main Stem Klamath River (excluding IGH)	17%	75%	7%	1%	100%
Misc. Klamath Tributaries (above Hoopa and Yurok Reservations)	19%	73%	7%	1%	100%
Hoopa and Yurok Reservation tribs.	8%	81%	11%	1%	100%
Subtotals					
Total Spawner Escapement	11%	82%	7%	1%	100%
IN-RIVER HARVEST					
Angler Harvest					
Klamath River (below Hwy 101 bridge)	27%	61%	9%	2%	100%
Trinity River Basin (above Willow Creek)	32%	57%	9%	2%	100%
Balance of Klamath system	61%	35%	3%	1%	100%
Subtotals	49%	45%	6%	1%	100%
Indian Net Harvest					
Klamath River (below Hwy 101 bridge)	3%	67%	22%	8%	100%
Klamath River (Hwy 101 to Trinity mouth)	2%	75%	19%	5%	100%
Trinity River (Hoopa Reservation)	7%	81%	12%	0%	100%
Subtotals	3%	73%	18%	5%	100%
Total In-river Harvest	20%	63%	14%	3%	100%
IN-RIVER RUN					
Totals					
In-river Harvest and Escapement	12%	80%	8%	1%	100%
Angling Mortality (2% of harvest)	49%	45%	6%	1%	100%
Net Mortality (8% of harvest)	3%	73%	18%	5%	100%
Total In-river Run	12%	79%	8%	1%	100%

Appendix 7. Age Composition of the 1995 Klamath River fall chinook run, using jack estimates from CDFG "megatable", and scale analysis for adults.

Scale sample utilized as surrogate		AGE 2	3	4	5	Total Adults	Total
	SPAWNER ESCAPEMENT						
	Hatchery Spawners						
	Iron Gate Hatchery (IGH)	259	12,395	1,122	232	13,749	14,008
Willow Crk	Trinity River Hatchery (TRH)	109	13,907	947	25	14,879	14,988
	Subtotals	368	26,302	2,069	257	28,628	28,996
	Natural Spawners						
	Trinity River Basin						
Willow Crk	(above Willow Creek, excluding TRH)	13,019	77,858	4,711	125	82,694	95,713
	Salmon River Basin	1,658	2,779	1,077	134	3,990	5,648
	Scott River Basin	3,208	8,152	1,132	165	9,449	12,657
	Shasta River Basin	490	11,987	720	33	12,740	13,230
	Bogus Creek Basin	1,000	28,748	2,132	455	31,335	32,335
(I,B,S,S,S)*	Main Stem Klamath River (excluding IGH)	1,322	5,825	581	85	6,490	7,812
(I,B,S,S,S)*	Misc. Klamath Tributaries (above Hoopa and Yurok Reservations)	631	3,188	307	51	3,544	4,175
(S,S,S)**	Hoopa and Yurok Reservation tribs.	34	360	48	5	413	447
	Subtotals	21,448	138,885	10,977	1,071	150,641	172,186
	Total Spawner Escapement	21,816	[illegible]	13,046	1,328	179,268	201,182
	IN-RIVER HARVEST						
	Angler Harvest						
KR Creel	Klamath River (below Hwy 101 bridge)	282	631	97	20	748	1,030
Willow Crk	Trinity River Basin (above Willow Creek)	794	1,586	98	3	1,687	2,481
KR Creel	Balance of Klamath system	3,268	1,795	275	55	2,124	5,392
	Subtotals	4,344	4,013	469	78	4,559	8,903
	Indian Net Harvest						
	Klamath River (below Hwy 101 bridge)	137	3,523	1,181	415	5,119	5,256
	Klamath River (Hwy 101 to Trinity mouth)	152	5,373	1,350	332	7,055	7,207
	Trinity River (Hoopa Reservation)	268	2,942	426	15	3,383	3,651
	Subtotals	557	11,838	2,957	762	15,557	16,114
	Total In-river Harvest	4,901	15,855	3,426	838	20,116	25,018
	IN-RIVER RUN						
	Totals						
	In-river Harvest and Escapement	26,717	181,146	16,071	2,184	199,381	226,098
	Angling Mortality (2% of harvest)	87	80	9	2	91	178
	Net Mortality (8% of harvest)	45	947	237	61	1,245	1,290
	Total In-river Run	26,849	182,173	16,317	2,247	200,717	227,566

*(I,B,S,S,S)= IGH, Bogus Cr., Shasta R., Scott R., Salmon R.
**(S,S,S)= Shasta R., Scott R., Salmon R.

Appendix 8. Age Composition (percentages) of the 1995 Klamath River fall chinook run using jack estimation from the CDFG "megatable", and scale analysis for adults.

	AGE 2	3	4	5	Total
SPAWNER ESCAPEMENT					
Hatchery Spawners					
Iron Gate Hatchery (IGH)	2%	88%	8%	2%	100%
Trinity River Hatchery (TRH)	1%	93%	6%	0%	100%
Subtotals					
Natural Spawners					
Trinity River Basin					
(above Willow Creek, excluding TRH)	14%	81%	5%	0%	100%
Salmon River Basin	29%	49%	19%	2%	100%
Scott River Basin	25%	64%	9%	1%	100%
Shasta River Basin	4%	91%	5%	0%	100%
Bogus Creek Basin	3%	89%	7%	1%	100%
Main Stem Klamath River (excluding IGH)	17%	75%	7%	1%	100%
Misc. Klamath Tributaries (above Hoopa and Yurok Reservations)	15%	76%	7%	1%	100%
Hoopa and Yurok Reservation tribs.	8%	81%	11%	1%	100%
Subtotals					
Total Spawner Escapement	11%	82%	6%	1%	100%
IN-RIVER HARVEST					
Angler Harvest					
Klamath River (below Hwy 101 bridge)	27%	61%	9%	2%	100%
Trinity River Basin (above Willow Creek)	32%	64%	4%	0%	100%
Balance of Klamath system	61%	33%	5%	1%	100%
Subtotals	49%	45%	5%	1%	100%
Indian Net Harvest					
Klamath River (below Hwy 101 bridge)	3%	67%	22%	8%	100%
Klamath River (Hwy 101 to Trinity mouth)	2%	75%	19%	5%	100%
Trinity River (Hoopa Reservation)	7%	81%	12%	0%	100%
Subtotals	3%	73%	18%	5%	100%
Total In-river Harvest	20%	63%	14%	3%	100%
IN-RIVER RUN					
Totals					
In-river Harvest and Escapement	12%	80%	7%	1%	100%
Angling Mortality (2% of harvest)	49%	45%	5%	1%	100%
Net Mortality (8% of harvest)	3%	73%	18%	5%	100%
Total In-river Run	12%	80%	7%	1%	100%

Appendix 9 Age Composition of the 1995 Klamath River fall chinook run, using jack estimates from CDFG "megatable", and scale analysis for adults.

				AGE			
Scale sample utilized as surrogate		2	3	4	5	Total Adults	Total
	SPAWNER ESCAPEMENT						
	Hatchery Spawners						
	Iron Gate Hatchery (IGH)	259	12,395	1,122	232	13,749	14,008
	Trinity River Hatchery (TRH)	109	14,670	204	2	14,876	14,985
	Subtotals	368	27,065	1,326	234	28,625	28,993
	Natural Spawners						
	Trinity River Basin						
TR carcass survey	(above Willow Creek, excluding TRH)	13,019	75,980	6,266	448	82,694	95,713
	Salmon River Basin	1,650	2,779	1,077	124	3,980	5,630
	Scott River Basin	3,200	8,152	1,122	183	9,457	12,657
	Shasta River Basin	490	11,987	720	33	12,740	13,230
	Bogus Creek Basin	1,002	28,748	2,131	455	31,333	32,335
(I,B,S,S,S)*	Main Stem Klamath River (excluding IGH)	1,322	5,825	561	93	6,480	7,802
(I,B,S,S,S)*	Misc. Klamath Tributaries (above Hoopa and Yurok Reservations)	831	3,186	307	51	3,544	4,375
(S,S,S)**	Hoopa and Yurok Reservation tribs.	34	360	48	5	413	447
	Subtotals	21,548	137,017	12,232	1,392	150,641	172,189
	Total Spawner Escapement	21,916	164,082	13,558	1,626	179,266	201,182
	IN-RIVER HARVEST						
	Angler Harvest						
KR Creel	Klamath River (below Hwy 101 bridge)	282	631	97	20	747	1,029
TRH(WC)-(TRCS+TRH)***	Trinity River Basin (above Willow Creek)	794	2,800	(816)	(297)	1,687	2,481
KR Creel	Balance of Klamath system	3,268	1,793	275	55	2,124	5,392
	Subtotals	4,344	5,224	(444)	(222)	4,558	8,902
	Indian Net Harvest						
	Klamath River (below Hwy 101 bridge)	137	3,523	1,181	415	5,119	5,256
	Klamath River (Hwy 101 to Trinity mouth)	152	5,373	1,350	332	7,055	7,207
	Trinity River (Hoopa Reservation)	268	2,943	426	13	3,383	3,651
	Subtotals	557	11,839	2,957	760	15,557	16,114
	Total In-river Harvest	4,901	17,064	2,513	538	20,116	25,016
	IN-RIVER RUN						
	Totals						
	In-river Harvest and Escapement	26,817	181,146	16,071	2,164	199,381	226,198
	Angling Mortality (2% of harvest)	87	104	(9)	(4)	91	178
	Net Mortality (8% of harvest)	45	947	237	61	1,245	1,289
	Total In-river Run	26,948	182,197	16,299	2,221	200,717	227,665

*(I,B,S,S,S) = IGH, Bogus Crk, Shasta R., Scott R., Salmon R.

**(S,S,S) = Shasta R., Scott R., Salmon R.

*** TRH(WC)= TRH adults (3 yr, 4yr, 5yr) proportions derived from Willow Crk scale samples

*** TRCS = Adult proportions derived from TR Carcass survey scales.

*** TRH = TRH adult proportions derived from TRH scale samples.

Appendix 10. Age Composition (percentages) of the 1995 Klamath River fall chinook run using jack estimates from the CDFG "megatable", and scale analysis for adults.

			AGE		
	2	3	4	5	Total
SPAWNER ESCAPEMENT					
Hatchery Spawners					
Iron Gate Hatchery (IGH)	2%	88%	8%	2%	100%
Trinity River Hatchery (TRH)	1%	98%	1%	0%	100%
Subtotals					
Natural Spawners					
Trinity River Basin					
(above Willow Creek, excluding TRH)	14%	79%	7%	0%	100%
Salmon River Basin	29%	49%	19%	2%	100%
Scott River Basin	25%	64%	9%	1%	100%
Shasta River Basin	4%	91%	5%	0%	100%
Bogus Creek Basin	3%	89%	7%	1%	100%
Main Stem Klamath River (excluding IGH)	17%	75%	7%	1%	100%
Misc. Klamath Tributaries (above Hoopa and Yurok Reservations)	19%	73%	7%	1%	100%
Hoopa and Yurok Reservation tribs.	8%	81%	11%	1%	100%
Subtotals					
Total Spawner Escapement	11%	82%	7%	1%	100%
IN-RIVER HARVEST					
Angler Harvest					
Klamath River (below Hwy 101 bridge)	27%	61%	9%	2%	100%
Trinity River Basin (above Willow Creek)	32%	113%	-33%	-12%	100%
Balance of Klamath system	61%	33%	5%	1%	100%
Subtotals	49%	59%	-5%	-2%	100%
Indian Net Harvest					
Klamath River (below Hwy 101 bridge)	3%	67%	22%	8%	100%
Klamath River (Hwy 101 to Trinity mouth)	2%	75%	19%	5%	100%
Trinity River (Hoopa Reservation)	7%	81%	12%	0%	100%
Subtotals	3%	73%	18%	5%	100%
Total In-river Harvest	20%	68%	10%	2%	100%
IN-RIVER RUN					
Totals					
In-river Harvest and Escapement	12%	80%	7%	1%	100%
Angling Mortality (2% of harvest)	49%	59%	-5%	-2%	100%
Net Mortality (8% of harvest)	3%	73%	18%	5%	100%
Total In-river Run	12%	80%	7%	1%	100%

Appendix 11. Age Composition of the 1995 Klamath River fall chinook run, using jack estimates from CDFG "megatable", and scale analysis for adults.

Scale sample utilized as surrogate		AGE 2	3	4	5	Total Adults	Total
	SPAWNER ESCAPEMENT						
	Hatchery Spawners						
	Iron Gate Hatchery (IGH)	259	12,395	1,122	232	13,749	14,008
	Trinity River Hatchery (TRH)	109	14,670	204	2	14,876	14,985
	Subtotals	368	27,065	1,326	234	28,625	28,993
	Natural Spawners						
	Trinity River Basin						
TR Carcass	(above Willow Creek, excluding TRH)	13,019	75,980	6,266	448	82,694	95,713
	Salmon River Basin	1,650	2,779	1,077	124	3,980	5,630
	Scott River Basin	3,200	8,152	1,122	183	9,457	12,657
	Shasta River Basin	490	11,987	720	33	12,740	13,230
	Bogus Creek Basin	1,002	28,748	2,131	455	31,333	32,335
(I,B,S,S,S)*	Main Stem Klamath River	1,322	5,825	561	93	6,480	7,802
	(excluding IGH)						0
(I,B,S,S,S)*	Misc. Klamath Tributaries	831	3,186	307	51	3,544	4,375
	(above Hoopa and Yurok Reservations)						
(S,S,S)**	Hoopa and Yurok Reservation tribs.	34	360	48	5	413	447
	Subtotals	21,548	137,017	12,232	1,392	150,641	172,189
	Total Spawner Escapement	21,916	164,082	13,558	1,626	179,266	201,182
	IN-RIVER HARVEST						
	Angler Harvest						
KR Creel	Klamath River (below Hwy 101 bridge)	282	631	97	20	747	1,029
KR Creel	Trinity River Basin (above Willow Creek)	794	1,424	218	44	1,687	2,481
KR Creel	Balance of Klamath system	3,268	1,793	275	55	2,124	5,392
	Subtotals	4,344	3,848	590	119	4,558	8,902
	Indian Net Harvest						
	Klamath River (below Hwy 101 bridge)	137	3,523	1,181	415	5,119	5,256
	Klamath River (Hwy 101 to Trinity mouth)	152	5,373	1,350	332	7,055	7,207
	Trinity River (Hoopa Reservation)	268	2,943	426	13	3,383	3,651
	Subtotals	557	11,839	2,957	760	15,557	16,114
	Total In-river Harvest	4,901	15,688	3,547	879	20,116	25,016
	IN-RIVER RUN						
	Totals						
	In-river Harvest and Escapement	26,817	179,770	17,105	2,505	199,381	226,198
	Angling Mortality (2% of harvest)	87	77	12	2	91	178
	Net Mortality (8% of harvest)	45	947	237	61	1,245	1,289
	Total In-river Run	26,949	180,794	17,354	2,568	200,717	227,665

*(I,B,S,S,S)= IGH, Bogus Ck., Shasta R., Scott R., Salmon R.
**(S,S,S)= Shasta R., Scott R., Salmon R.

Appendix 12. Age Composition (percentages) of the 1995 Klamath River fall chinook run using jack estimates from the CDFG "megatable", and scale analysis for adults.

	AGE 2	3	4	5	Total
SPAWNER ESCAPEMENT					
Hatchery Spawners					
Iron Gate Hatchery (IGH)	2%	88%	8%	2%	100%
Trinity River Hatchery (TRH)	1%	98%	1%	0%	100%
Subtotals					
Natural Spawners					
Trinity River Basin					
(above Willow Creek, excluding TRH)	14%	79%	7%	0%	100%
Salmon River Basin	29%	49%	19%	2%	100%
Scott River Basin	25%	64%	9%	1%	100%
Shasta River Basin	4%	91%	5%	0%	100%
Bogus Creek Basin	3%	89%	7%	1%	100%
Main Stem Klamath River	17%	75%	7%	1%	100%
(excluding IGH)					
Misc. Klamath Tributaries	19%	73%	7%	1%	100%
(above Hoopa and Yurok Reservations)					
Hoopa and Yurok Reservation tribs.	8%	81%	11%	1%	100%
Subtotals					
Total Spawner Escapement	11%	82%	7%	1%	100%
IN-RIVER HARVEST					
Angler Harvest					
Klamath River (below Hwy 101 bridge)	27%	61%	9%	2%	100%
Trinity River Basin (above Willow Creek)	32%	57%	9%	2%	100%
Balance of Klamath system	61%	33%	5%	1%	100%
Subtotals	49%	43%	7%	1%	100%
Indian Net Harvest					
Klamath River (below Hwy 101 bridge)	3%	67%	22%	8%	100%
Klamath River (Hwy 101 to Trinity mouth)	2%	75%	19%	5%	100%
Trinity River (Hoopa Reservation)	7%	81%	12%	0%	100%
Subtotals	3%	73%	18%	5%	100%
Total In-river Harvest	20%	63%	14%	4%	100%
IN-RIVER RUN					
Totals					
In-river Harvest and Escapement	12%	79%	8%	1%	100%
Angling Mortality (2% of harvest)	49%	43%	7%	1%	100%
Net Mortality (8% of harvest)	3%	73%	18%	5%	100%
Total In-river Run	12%	79%	8%	1%	100%

Appendix 13. Age Composition of the 1995 Klamath River fall chinook run, using jack estimates from CDFG "megatable", and scale analysis for adults.

Scale sample utilized as surrogate		AGE 2	3	4	5	Total Adults	Total
	SPAWNER ESCAPEMENT						
	Hatchery Spawners						
	Iron Gate Hatchery (IGH)	259	12,395	1,122	232	13,749	14,008
	Trinity River Hatchery (TRH)	109	14,670	204	2	14,876	14,985
	Subtotals	368	27,065	1,326	234	28,625	28,993
	Natural Spawners						
	Trinity River Basin						
TR Carcass	(above Willow Creek, excluding TRH)	13,019	75,980	6,266	448	82,694	95,713
	Salmon River Basin	1,650	2,779	1,077	124	3,980	5,630
	Scott River Basin	3,200	8,152	1,122	183	9,457	12,657
	Shasta River Basin	490	11,987	720	33	12,740	13,230
	Bogus Creek Basin	1,002	28,748	2,131	455	31,333	32,335
(I,B,S,S,S)*	Main Stem Klamath River (excluding IGH)	1,322	5,825	561	93	6,480	7,802
(I,B,S,S,S)*	Misc. Klamath Tributaries (above Hoopa and Yurok Reservations)	831	3,186	307	51	3,544	4,375
(S,S,S)**	Hoopa and Yurok Reservation tribs.	34	360	48	5	413	447
	Subtotals	21,548	137,017	12,232	1,392	150,641	172,189
	Total Spawner Escapement	21,916	164,082	13,558	1,626	179,266	201,182
	IN-RIVER HARVEST						
	Angler Harvest						
KR Creel	Klamath River (below Hwy 101 bridge)	282	631	97	20	747	1,029
Willow Crk	Trinity River Basin (above Willow Creek)	794	1,588	96	3	1,687	2,481
(S,S,S)**	Balance of Klamath system	3,268	1,852	247	25	2,124	5,392
	Subtotals	4,344	4,071	439	47	4,558	8,902
	Indian Net Harvest						
	Klamath River (below Hwy 101 bridge)	137	3,523	1,181	415	5,119	5,256
	Klamath River (Hwy 101 to Trinity mouth	152	5,373	1,350	332	7,055	7,207
	Trinity River (Hoopa Reservation)	268	2,943	426	13	3,383	3,651
	Subtotals	557	11,839	2,957	760	15,557	16,114
	Total In-river Harvest	4,901	15,911	3,397	808	20,116	25,016
	IN-RIVER RUN						
	Totals						
	In-river Harvest and Escapement	26,817	179,993	16,955	2,433	199,381	226,198
	Anging Mortality (2% of harvest)	87	81	9	1	91	178
	Net Mortality (8% of harvest)	45	947	237	61	1,245	1,289
	Total In-river Run	26,948	181,021	17,200	2,495	200,717	227,666

(I,B,S,S,S)= IGH, Bogus Ck., Shasta R., Scott R., Salmon R.
(S,S,S)= Shasta R., Scott R., Salmon R.

Appendix 14. Age Composition (percentages) of the 1995 Klamath River fall chinook run using jack estimates from the CDFG "megatable", and scale analysis for adults.

	AGE 2	3	4	5	Total
SPAWNER ESCAPEMENT					
Hatchery Spawners					
Iron Gate Hatchery (IGH)	2%	88%	8%	2%	100%
Trinity River Hatchery (TRH)	1%	98%	1%	0%	100%
Subtotals					
Natural Spawners					
Trinity River Basin					
(above Willow Creek, excluding TRH)	14%	79%	7%	0%	100%
Salmon River Basin	29%	49%	19%	2%	100%
Scott River Basin	25%	64%	9%	1%	100%
Shasta River Basin	4%	91%	5%	0%	100%
Bogus Creek Basin	3%	89%	7%	1%	100%
Main Stem Klamath River (excluding IGH)	17%	75%	7%	1%	100%
Misc. Klamath Tributaries (above Hoopa and Yurok Reservations)	19%	73%	7%	1%	100%
Hoopa and Yurok Reservation tribs.	8%	81%	11%	1%	100%
Subtotals					
Total Spawner Escapement	11%	82%	7%	1%	100%
IN-RIVER HARVEST					
Angler Harvest					
Klamath River (below Hwy 101 bridge)	27%	61%	9%	2%	100%
Trinity River Basin (above Willow Creek)	32%	64%	4%	0%	100%
Balance of Klamath system	61%	34%	5%	0%	100%
Subtotals	49%	46%	5%	1%	100%
Indian Net Harvest					
Klamath River (below Hwy 101 bridge)	3%	67%	22%	8%	100%
Klamath River (Hwy 101 to Trinity mouth)	2%	75%	19%	5%	100%
Trinity River (Hoopa Reservation)	7%	81%	12%	0%	100%
Subtotals	3%	73%	18%	5%	100%
Total In-river Harvest	20%	64%	14%	3%	100%
IN-RIVER RUN					
Totals					
In-river Harvest and Escapement	12%	80%	7%	1%	100%
Angling Mortality (2% of harvest)	49%	46%	5%	1%	100%
Net Mortality (8% of harvest)	3%	73%	18%	5%	100%
Total In-river Run	12%	80%	8%	1%	100%

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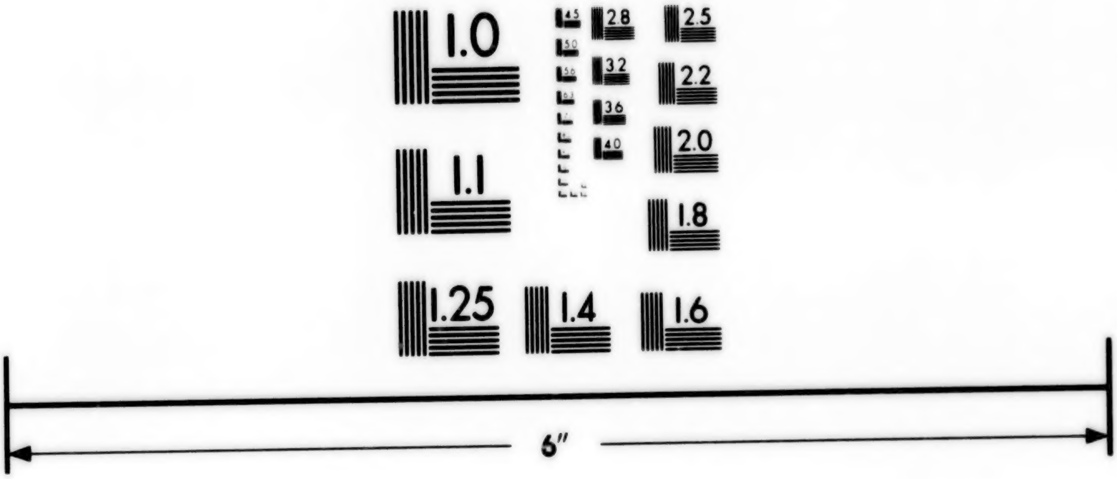

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